



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/728,243

12/04/2003

Duck Young Jung

SUN-0035

7809

7590 08/03/2007
CANTOR COLBURN LLP
55 Griffin Road South
Bloomfield, CT 06002

EXAMINER

PETERSON, CHRISTOPHER K

ART UNIT

PAPER NUMBER

2622

MAIL DATE

DELIVERY MODE

08/03/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/728,243	Applicant(s) JUNG, DUCK YOUNG	
	Examiner Christopher K. Peterson	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-7,10-15,17 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7,10-15,17 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed on May 1, 2007 has been entered and considered by examiner. Claims 3, 8, 9, and 16 have been cancelled. Claims 1, 2, 4 – 7, 10 – 15, 17, and 19 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 2, 4 – 7, 10 – 15, 17, and 19 have been considered but are moot in view of the new ground(s) of rejection.

In regard to the drawings being objected to. Examiner respectively withdraws this objection. Examiner has received the replacement sheet (Figure 5).

In regard to claims 1 – 2, 4 – 6, and 15, the Applicant has amended the claims to include the limitations "latch type comparator" and "an analog signal of a photocell of an adjacent pixel". The applicant argues that Arias-Estrada (US Patent # 6,253,161) does not teach the limitations "latch type comparator" and "an analog signal of a photocell of an adjacent pixel" (page 8). The Examiner agrees that Arias-Estrada does not teach the limitations, but the reference of Stettner (US Patent # 6,362,482) does teach the limitations.

Specifically, noting the Stettner reference, Fig 7 and (Col. 6, line 13 – 39) shows that the comparator (analog algorithm circuitry 57) to be a latch type comparator with the signal (ϕ_{ck}) being the latch signal. The Stettner reference, Fig 7 and (Col. 6, line 13 – 39) also shows an analog signal of a photocell of an adjacent pixel. The inputs to the

Art Unit: 2622

comparator (Vdtop, Vdbom, Vdrig, or Vdlef) refer to the pixels adjacent to the pixel (Vcen). For this reason, the Examiner believes that Stettner does teach the limitations of newly-amended claims 1 – 2, 4 – 6, and 15, as will be set forth in further detail below.

In regard to claims 7, 10 – 13, 17, and 19, the Applicant has amended the claims as amended claims 1 and 15. Therefore not the discussion above concerning the amended limitations of claims 7 and 17.

In regard to claim 14, reference Shroyer (US Patent # 4,805,010) has been added for new grounds of rejection. Shroyer teaches a second photocell is arranged outside each of the plurality of pixels (Col. 3, lines 43 – 61). For this reason, the Examiner believes that Shroyer does teach the limitations of claim 14, as will be set forth in further detail below.

Claim Objections

3. Claims 4, 6, 10, and 12 are objected to because of the following informalities:

As to claims 4, 6, 10, and 12, these claims cite the limitation "reference signal". The limitation "reference signal" was deleted from the independent claims 1 and 7 respectively. Appropriate correction is required.

Claim 19 is objected to because of the following informalities:

As to claim 19, this claim depends on claim 18, which was cancelled. Examiner will treat claim 19 as dependent upon claim 17. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 2, 4 – 6, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Stettner (US Patent # 6,362,482).

As to claim 1, Stettner (Fig. 7) discloses an image sensor having a plurality, of pixels, each pixel comprising:

- a photocell (detector) which receives light and generates an analog signal corresponding to a quantity, of the received light (Col. 5, line 64 – Col. 6, line 12).
- a latch type comparator (57) which compares the analog signal of the photocell (Vcen) and an analog signal of a photocell of an adjacent pixel (Vdtop, Vdbom, Vdrig, or Vdlef) and generates a digital signal having a value of the compared result (Col. 6, line 13 – 39); and
- a switch (53) which outputs the digital signal of the latch type comparator under the control of the pixel select signal (address polling processor 54) (Col. 6, line 13 – 39).

As to claim 15, Stettner teaches an optical pointing system comprising:

- a) a plurality of pixels, each having
 - a photocell which receives light and generates an analog signal corresponding to a quantity of the received light (Col. 5, line 64 – Col. 6, line 12),

- a latch type comparator which compares the analog signal of the photocell and an analog signal of a photocell of an adjacent pixel and generates a digital signal having a value of the compared result (Col. 6, line 13 – 39), and
 - a switch which outputs the digital signal of the latch type comparator under the control of the pixel select signal (Col. 6, line 13 – 39);
- b) an image processor which calculates a movement value using the digital signals outputted from the plurality of pixels and generates a pixel select signal and a shutter control information signal (Col. 17, line 51 – Col. 18, line 7); and
- c) a shutter control circuit which generates a shutter control signal corresponding to the shutter control information signal of the image processor (Col. 17, line 51 – Col. 18, line 7).

As to claim 2, Stettner teaches the image sensor as claimed in claim 1, wherein the digital signal is a digital signal having a 1-bit structure (Col. 14, lines 41 – 64).

As to claim 4, Stettner teaches the image sensor as claimed in claim 1, wherein the reference signal is a reference voltage. Stettner teaches the analog signal from adjacent pixels are compared (Col. 6, line 13 – 39).

As to claim 5, Stettner teaches the image sensor as claimed in claim 1, wherein the photocell is a photo diode that generates a photocurrent corresponding to the received quantity of light (Col. 3, line 66 – Col. 4, line 35).

As to claim 6, Stettner teaches the image sensor as claimed in claim 1, wherein the latch type comparator outputs a first signal when the analog signal of the photocell is greater than the reference signal and outputs a second signal when the analog signal of the photocell is less than the reference signal (Col. 14, line 41 – Col. 5, line 33).

Claim Rejections - 35 USC § 103

5. Claims 7, 10 – 13, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stettner (US Patent # 6,362,482) in view of Goto (US Patent # 6,982,759).

As to claim 7, note the discussion of Stettner above, this claim differs from claim 1 only in that the limitation "second photocell" is additionally recited. Stettner does not teach wherein at least one second photocell for generating a second analog signal corresponding the received quantity of light. In same field of endeavor Goto (Fig. 1) teaches two photocells (1-1 and 1-2) at least a second photocell (1-2) which generates a second analog signal corresponding the received quantity of light to provide a shutter control information. (Col. 2, lines 49- 56). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a second photocell as taught by Goto to the pixel of Stettner because the second photocell allows the readout speed for one frame can be enhanced to twice the normal readout speed, thereby high speed operation is obtained. (Col. 5, line 54 - Col. 6, line 14 of Goto).

As to claim 17, note the discussion of Stettner and Goto above, this claim differs from claims 7 and 15 only in that the claim 15 has only one photodiode whereas claim

17 requires a second photodiode (Col. 2, lines 49 - 56 of Goto). Thus claim 17 is analyzed as previously discussed with respect to claims 15 and 7 above

As to claim 10, this claim differs from claim 4 only in that the claim 4 depends on claim 1 whereas claim 10 depends on claim 7. Thus claim 10 is analyzed as previously discussed with respect to claim 4 above.

As to claim 11, Goto teaches above the image sensor as claimed in claim 7, wherein at least one of the first and second photocells comprises a photo diode (1- 2) and a transistor (2-2), the photodiode generating a photocurrent corresponding to the received quantity of light (Col. 2, line 57 - 65)

As to claim 12, Stettner teaches the image sensor as claimed in claim 7, wherein the latch type comparator outputs a first signal when the analog signal of any one of the first and second photocells is greater than the reference signal and outputs a second signal when the analog signal of any one of the first and second photocells is less than the reference signal (Col. 14, line 41 – Col. 5, line 33).

As to claim 13, Goto teaches at least a second photocell (e.g. 1-2) is arranged inside each of the plurality of pixels. (Fig. 1 and Col. 2, lines 49 - 56).

As to claim 19, Goto teaches the limitations of claim 19 as previously discussed with respect to claim 13 above, respectively since claim 19 recites the same limitations as claim 13.

Art Unit: 2622

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stettner (US Patent # 6,362,482) in view of Goto (US Patent # 6,982,759) as applied to claim 7 above, and further in view of Shroyer (US Patent # 4,805,010).

As to claim 14, note the discussion above, Stettner and Goto do not teach the second photocell arranged outside each of the plurality of pixels. Shroyer teaches the image sensor, wherein the second photocell is arranged outside each of the plurality of pixels (Col. 3, lines 43 – 61). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a second photocell as taught by Shroyer to the pixel of Stettner and Goto because color balance should be based on a sample of the light illuminating the subject, and not the light reflected from the subject, which may possess a color bias unrelated to the color characteristics of the illuminant. (Col. 3, lines 43 – 61).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

Art Unit: 2622

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher K. Peterson whose telephone number is 571-270-1704. The examiner can normally be reached on Monday - Friday 6:30 - 4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NgocYen Vu can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CKP
25JUL2007


NGOC-YEN VU
SUPERVISORY PATENT EXAMINER